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STUDY OF THE PREVALENCE OF ANEMIA DURING PREGNANCY: CASE OF 3 URBAN HEALTH CENTERS OF KENITRA NORTH WEST OF MOROCCO

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ABSTRACT

In order to assess the prevalence of anemia during pregnancy and to determine its risk factors, a retrospective study was conducted from October 3 to November 16, 2016 at three health centers in Kenitra Province.

The sample is made up of 477 women who came for prenatal consultation at the maternal and child health unit who had performed an NFS. A detailed farm return with data on their pregnancies are statistically analysed by SPSS software.

The prevalence of anemia during the puerperal gravido in the population is 34%. Analysis of data using the khi-2 test reveals that four of the nine factors studied: pregnancy monitoring, folic acid iron supplementation are major risk factors, as well as women with a history are most affected by anemia during pregnancy, as are the most exposed patients who have close inter-reproductive space.

The results of this study demonstrate the magnitude and long-term consequences of anemia during pregnancy, as well as the risk factors contributing to the development of this gravid anemia, and support the importance of implementing surveillance and evaluation measures for prevention, because of its contribution to the creation of maternal and child mortality.

KEYWORDS: Prevalence, Anemia, Pregnancy, Health Centers & Kenitra

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Original Article

INTRODUCTION

Anemia is one of the most widespread public health problems, affecting both developed and developing countries. It has serious consequences for health and well-being, as well as social and economic repercussions. It causes, among other things, cognitive development delays, physical inability to work, and in severe cases it increases the risk of mortality, especially during the perinatal period.

The WHO reports that 41.8% of pregnant women (developed and developing countries combined) have anemia (1). It is a variable severity disorder to which 17–31% of pregnant women in developed countries are exposed and 52.8-61.3% in Africa south of the Sahara (1). Some studies reported prevalence of 16.8%, 22.1%, 24.4%, 32.8%, 41.6% and 100% respectively in Iran, Uganda, Great Britain, Ethiopia, Turkia and India (2.3). In

Morocco, the few national or regional surveys show that anemia is still a health problem, especially for women. The prevalence of iron deficiency anemia in pregnant women is 37.2% and 32.6% in women of childbearing age (4).

Despite the importance of this health scourge, little progress has been reported in the study of the epidemiology of anemia, especially in pregnant women in Kenitra province, to generate actions to improve the quality of prevention, screening and management by health professionals.

To this end, this study attempts to assess the prevalence of anemia in Pregnant Women, along with risk factors. This is a retrospective study that looked at pregnancy surveillance records at three urban health centres in Kenitra province.

2. RESEARCH METHOD

During the visit to the maternity ward of the Hospital El Idrissi, it turned out that several women during childbirth have a low hemoglobin rate which is an indicator of anemia.

The World Health Organization reports that anemia is defined as a rate hemoglobin less than or equal to 11 g/dl (5). Knowing well that these women for their childbirth, they are referred to this maternity. The study was carried out at three urban health centers in Kenitra province: Homane Fetouaki; Moulay El Hassan and Ain Sbai. The selection of Kenitra province and particularly the three core health care facilities was not occasional, but for the following reasons: A prevalence of anemia during pregnancy was significant. The city of Kenitra is composed of three major poles, which gives the possibility to have a representative sample.

Thus, the choice of a health centre of each pole is made according to the following criterion which is that the health centre with a higher prenatal consultation in 2015:- Saknia: Ain Sbai Health Centre: 350 women recruited at NHC (88.38%)- Bab Fes: Moulay El Hassan Health Centre: 374 women recruited at NHC (68.12%) - Ouled Oujih: Houmane El fetouaki Health Centre: 283 Women recruited at NHC (63%).

Pregnant women with a blood count (CBC) are included, while those with clinical anemia without biological evidence are excluded. The data collection tool is the surveillance card of the pregnancy, with respect to anonymity, the data includes among others: medical and surgical history, clinical data, gynecological and obstetric history, age, number of pregnancies, inter-reproductive space, socio-economic level and gestational age, etc. Statistical analysis was performed using SPSS software.

3. RESULTS

The overall prevalence: Of the 477 women in the three health centers in Kenitra over the study period, 164 pregnant women were anemic, while the remaining 313 had no anemia. This corresponds to a prevalence of 34%, which is more than one in three pregnant women being anemic.

Socio-economic characteristics of anemic women: The age of the patients ranged from 16 to 49 with an average of 25 years. Pregnant women under 25 years of age appeared to have a prevalence of 41.57% compared with 31.03% and 26.86% respectively for women aged 25 to 35 years and those over 35 years of age. It should also be noted that the sample is characterized by the youth of the parturious women. In fact, 232 of the pregnant women, 48.64%, were between 25 and 35 years of age. Almost half of the patients were of average socio-economic level high; economic was not significant given that 33 women of high socio-economic level. But, it is recognized that the prevalence of anemia was higher among women of low socio-economic status compared to those of medium and high status.

Defined as the interval between two pregnancies, it should be noted that 108 women have a close inter-reproductive space, and 168 women with an unobstructed inter-reproductive space. The prevalence of anemia in relation to the total population was 40.74% and 27.98%, respectively for those in the close inter-reproductive space and not close together. Thus, close pregnancy is a risk factor for gravid anemia as the prevalence of anemia decreases with the increase of It should be noted that 218 are nulliparous or 45.70%, However, 82 were anemic, or 37.61%. Primiparous accounted for 27.04%, of which 31.78% were anemic. There were 38 anemics among the 121 or 31.40% and finally 9 multiparous, among which 3 women were anemic or 33.33%. Thus, referring to the prevalence results of anemia during pregnancy, it can be seen that there is not a significant difference between the different states of parity. Of the 197 primigestes, 72 were anemic or 36.54%, of the 212 last gestures, 70 were anemic or 33.02%, while the prevalence of anemia was 32.35%. Thus, the prevalence of anemia was almost constant in primi, multi and pauci gestes (Table 1).

Risk factors for anemia during pregnancy: The parturient women had no notable recent medical or surgical history apart from three that were followed for type 1 diabetes, three others for HTA and only one that was followed for asthma. Patients did not have a personal or family history of hemopathies or a history of gravidal anemia. While 385 patients who had no particular history and 92 had a history of gynecologists: 4 had deaths-5 of the IUF, 23 of the scar uterus and 60 of the abortions. It should be noted that 25 of the 60 anemic women with a history of abortions or 41.67%; 2 of the 5 women with a history of IUF, or 40%; and of the 23 women with a history of scar uterus, 11 were anemic, finally 2 women with a history of stillborn were anemic. Patients who have not regularly monitored their pregnancy report 252, the prevalence of anemia during pregnancy is significantly higher among patients who have not followed their pregnancy with 41.67% compared with 26.22% among gestational mothers who have regularly followed their pregnancy. Cases of anemia are most often encountered during the second trimester, so the majorities were received in the second trimester, 283 patients, 49 in the first trimester and 145 in the third trimester.

Anemia during pregnancy is higher during the 2nd trimester with 90 anemic patients or 31.80%, followed by the third trimester, 42.07% of the patients received during this period were anemic and finally the prevalence of anemia was estimated at 26.53% in the first trimester. The number of women, who have received systematic preventive or curative martial treatment during pregnancy, is estimated at 250 patients, 18 of whom were anemic, with a prevalence of 52.41% or 7.2% of all anemic patients, while among the 227 who had not taken martial supplements during their pregnancy, 146 were anemic, with a prevalence of 47.59% and 64.32% of women with anemia. Women who did not have iron supplements were more numerous and had a much higher prevalence of anemia compared to those who were supplemented (Table 2).

Table 1: Socio-Economic characteristics of Anemic Women

		Anemic women		Non Anemic women					
		Number	%	Number	%	Khi-2	*P*	OR	IC
Age	<25	74	41.57	104	58.43	,801[a]	,371	1,259	,760 2,08
	25-35	72	31.03	160	68.97				
	>35	18	26.86	49	73.14				
Socio-economic level	Low	65	36.52	113	63.48	,259[a]	,611	1,107	,748 1,639
	Means	90	33.83	176	66.17				
	High	9	27.27	24	72.73				
Space inter-genesique	brought	44	40.74	64	59.26	4,847[a]	,028	1,770	1,062 2,950
	not brought	47	27.98	121	72.02				
Parity	Nulliparous	82	37.61	136	62.39	2,026[a]	,155	1,316	,901 1,923
	Primiparous	41	31.78	88	68.22				
	Pauciparouss	38	31.40	83	68.60				

	Multipares	3	33.33	6	66.67				
Gestite	Primigestes	72	36.54	125	63.46	,436[a]	,509	1,920	,268 13,754
	Paucigestes	70	33.02	142	66.98				
	Multigestes	22	32.35	46	67.65				

Table 2: Risk Factors for Anemia during Pregnancy

		Anemic women		Non anemic women					
		Nombre	**%**	**Nombre**	**%**	**Khi-2**	***P***	**OR**	**IC**
History	Abortion	25	41,67	35	58,33	4,538[a]	,033	1,631	1,037 2,564
	Fœtal death in utero	2	40	3	60				
	Scar womb	11	47,83	12	52,17				
	Born death	2	50	2	50				
Montoring	Tracked	59	26,22	166	73,78	12,107[a]	,001	1,984	1,345 2,926
	Untracked	105	41,67	147	58,33				
Gestational age	Ft trimester	13	26,53	36	73,47	1,008[a]	,315	,718	,375 1,374
	Sd trimester	90	31,80	193	68,20				
	Td trimester	61	42,07	84	57,93				
Supplementassions	Took	18	7.2	232	92.80	157,852[a]	,000	20,263	11,775 34,871
	Not Took	146	64.32	81	35.68				

4. DISCUSSIONS

The prevalence of anemia during pregnancy in many developing countries is high, with reported rates ranging from 35% to 75%. The prevalence of anemia and pregnancy is 34%. It appears that anemia is quite common in women during gestation, more than one in three women are anemic. Indeed, a study in Malaysia in the district of JOHOR BAHRU had shown a prevalence of 36.6% (6). As far as the one in the region of Dakar (7), it had shown a higher prevalence of 66.1%, in Morocco in the service of gynecologist-maternity obstetrics at the CHU Hassan II in Fez had detected 39.2% anemia in a sample of 553 women (8). Women with a low and average standard of living, unaware of health problems, are not likely to be the most exposed, whereas Bekele states that low socio-economic levels are associated with anemia in pregnancy (9). All the more nearly three-quarters or 70% of the patients were of low and medium socio-economic level, with a prevalence of 36.52% and 33.83% respectively for women of low, medium socio-economic level (10). The inter-reproductive space with a negative effect is reported on the occurrence of anemia in pregnant women, so the prevalence of anemia in relation to the total population was respectively 40.74% and 27.98% for those in the near and for those in not close inter-reproductive space. It should be noted that close pregnancy is a risk factor for gravid anemia as the prevalence of anemia decreases with the increased inter-reproductive interval. In fact some authors found an association between close pregnancies (intergenerational space less than 2 years) and anemia in pregnancy (9, 11).

As for the prevalence of anemia during pregnancy, it is much higher in patients who did not follow their pregnancy with 41.67% anemia compared with 26.22% in pregnant women who had regularly followed their pregnancy, which proves that regular monitoring of the pregnant woman during the entire period of pregnancy avoids the risk of having anemia and many complications. One study found that more than half of women with anemia (57.1%) had 10 or fewer prenatal care visits. In other words, women who were admitted for prenatal care less than 10 times during pregnancy had anemia (12).

With regard to the age of pregnancy, it has no influence on iron deficiency during pregnancy, the results are inconsistent with the study (8), the increased risk of anemia was observed with the age of pregnancy.

Observance of iron and folic acid supplementation has a negative effect on the likelihood of iron deficiency anemia in pregnant women. The more the woman does not regularly take the iron-folic acid received during prenatal consultations; the lesser she will be exposed to gravity anemia. Similarly for this factor, the results are in line with the study carried out (4). The mother taking her martial treatment correctly increases her chance of escaping anemia, the hypothesis confirmed the fact that regular intake of folic acid decreases the occurrence of anemia during pregnancy.

Age, gestation and parity are not significantly related to the onset of anemia during pregnancy. Their relationship with anemia has been positive and not significant, and anemia is less of a concern for these factors. On the contrary, a study states that the increased risk of anemia in women in the third trimester of pregnancy observed (56.9%). The prevalence of anemia is higher in large multiparous (57.1%) compared to pauciparous (40.9%). She found that the proportion of anemia increased in the second and third trimesters, which could be explained by increased haemodilution as early as the second trimester of pregnancy (13). Anemia during pregnancy was significantly related to a history of gynecologists causing blood loss, a result that is contradictory to that of Charlotte and col (2016) (13).

5. CONCLUSIONS

The results of this study demonstrate the magnitude and long-term consequences of anemia during pregnancy. Also among the nine variables tested in pregnant women in Kenitra Province, 4 are significantly associated with gravidic anemia (inter-reproductive space, pregnancy follow-up, gynecological history, supplements), what should be noted is that these results coincide on 2 factors (pregnancy follow-up, martial supplements) of Ms Sokhna's thesis (14) and support the importance of implementing surveillance and evaluation measures for prevention, because of its contribution to the creation of maternal and child mortality. And therefore, it is important to redouble efforts to formulate and implement effective strategic plans to combat this disease. For this, it is necessary to put actions among other things:

- The first intervention must be prevention.
- Nutritional advice should be given to patients.
- Dissemination of information to pregnant women about anemia.
- Oral iron supplements are envisaged.
- Evaluate annually the quality of prenatal consultations provided by health facilities.
- Incorporate awareness of iron deficiency anemia, especially during pregnancy, into school curricula. Studies should also be carried out to assess the risk factors of martial deficiency in rural areas and regional specificities.

REFERENCES

1. *WHO/CDC. Worldwide Prevalence of Anemia 1993-2005 WHO Global Data base on Anemia. Geneva, Switzerland: WHO Press; 2008.*
2. *Mardania Mahnaz, Rezapourb Sadegh, Ahmadipourb Shokoufeh, Mohsenzadehb Azam AH, Khalkhali Rad AH, Roostac Sajjad, Ebrahimzadeh Farzad. Prevalence of anemia and its risk factors among pregnant women in Khorramabad (Iran) 2010-2014. J Matern Fetal Neonatal Med. 2016;26:1–4.*
3. *Vemulapalli B, Rao KK. Prevalence of anemia among pregnant women of rural community in Vizianagram, North coastal Andhra Pradesh, India. Asian Journal of Medical Science. 2014;5(2):21–25.*
4. *MS, 2000. Enquête nationale sur l'anémie par carence en fer, la supplémentation et la couverture des ménages par le sel iodé. Ministère de la Santé Rabat Maroc.*

5. *OMS, Microsoft Word - haemoglobin_fr_09-06-2011.docx*
6. *Siti Khatijah AR et al. « prevalen anemia semasa mengandung dan faktor-faktor mempengaruhinya di johor bahru" Malaysian Journal of Public Health Medicine 2010, Vol.10 (1):p70–83*
7. *Sharma, B., & Mahajan, H. Assessment of Health Profile of Zari Workers with Special Reference to Musculoskeletal Disorders in an Urban Slum of Mumbai, India.*
8. *Mémoire de recherche réalisé par M. bayebie BADO (2012-2013) consultable sur le site :*
9. *http://bibliotheque.cesag.sn/gestion/documents_numeriques/M0220DSES14.PDF*
10. *Dia Ndeye Sokhna. Thèse sur la prévalence de l'anémie au cours de l'état gravidopuerperal au chu Hassan II de la ville de Fès en 2011.*
11. *Bekele Alemayehu, Tilahun Marelign, Mekuria Aleme. Prevalence of Anemia and Its Associated Factors among Pregnant Women Attending Antenatal Care in Health Institutions of Arba Minch Town, Gamo Gofa Zone, Ethiopia: A Cross-Sectional Study. Anemia. 2016;2016:1073192. Epub 2016 Feb 22.*
12. *Bukar M, Audu BM, Yahaya UR, Melah GS. Anaemia in pregnancy at booking in Gombe, North-eastern Nigeria. J Obstet Gynaecol. 2008 Nov; 28(8):775–8.*
13. *Masthanaiah, T., & Kumari, A. K. (2018). Prevalence of Chronic Diseases and Utilization of Health Care Among Adults, India. IMPACT: International Journal of Research in Humanities, Arts and Literature, 6(2), 125-134.*
14. *Nwizu EN, Lliyasu Z, Ibrahim SA, Galadanci H. Socio-demographic and maternal factors in anemia in pregnancy at booking in Kano, Northern Nigeria. Afr J Repord Health. 2011; 15(4):33–41.*
15. *Villar J, Ba'aqeel H, Piaggio G, Lumbiganon P, Miguel Belizan J, Farnot U, et al. WHO Antenatal Care Trial Research Group. WHO antenatal care randomized trial for the evaluation of a new model of routine antenatal care.Lancet. 2001;357:1551–64.*
16. *Charlotte Nguefack Tchente, Eveline Ngouadjeu Dongho Tsakeu,Arlette Géraldine Nguea, Théophile Nana Njamen, Gregory Halle Ekane, et Eugene Belley Priso, Prévalence et facteurs associés à l'anémie en grossesse à l'Hopital général de DoualaPrévalence et facteurs associés à l'anémie en grossesse à l'Hôpital Général de Do2016; 25: 133.*
17. *Mahfoud, N., & Brahamia, B. (2014). The problems of funding the health system in Algeria. International Journal of Medicine and Pharmaceutical Sciences (IJMPS).*
18. *Mémoire de thèse réalisé par M. DIA NDEYE SOKHNA 2011. http://scolarite.fmp-usmba.ac.ma/cdim/mediatheque/e_theses/106-11.pdf Consulté le 28 Avril 2018.*

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